

(No Model.)

G. N. REIFF

RAILWAY SWITCH AND SIGNAL OPERATING DEVICE.

No. 352,780.

Patented Nov. 16, 1886.

Fig. 1.

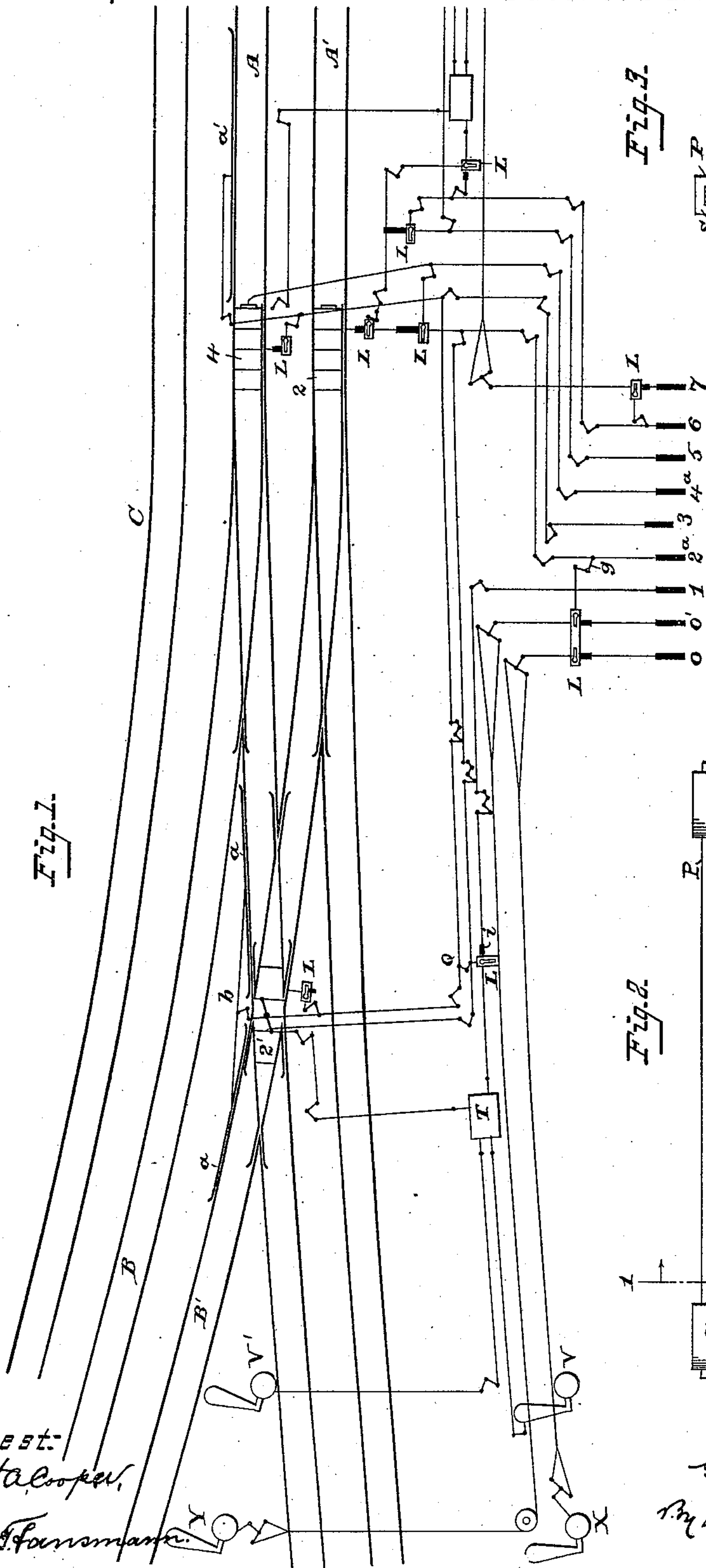


Fig. 2.

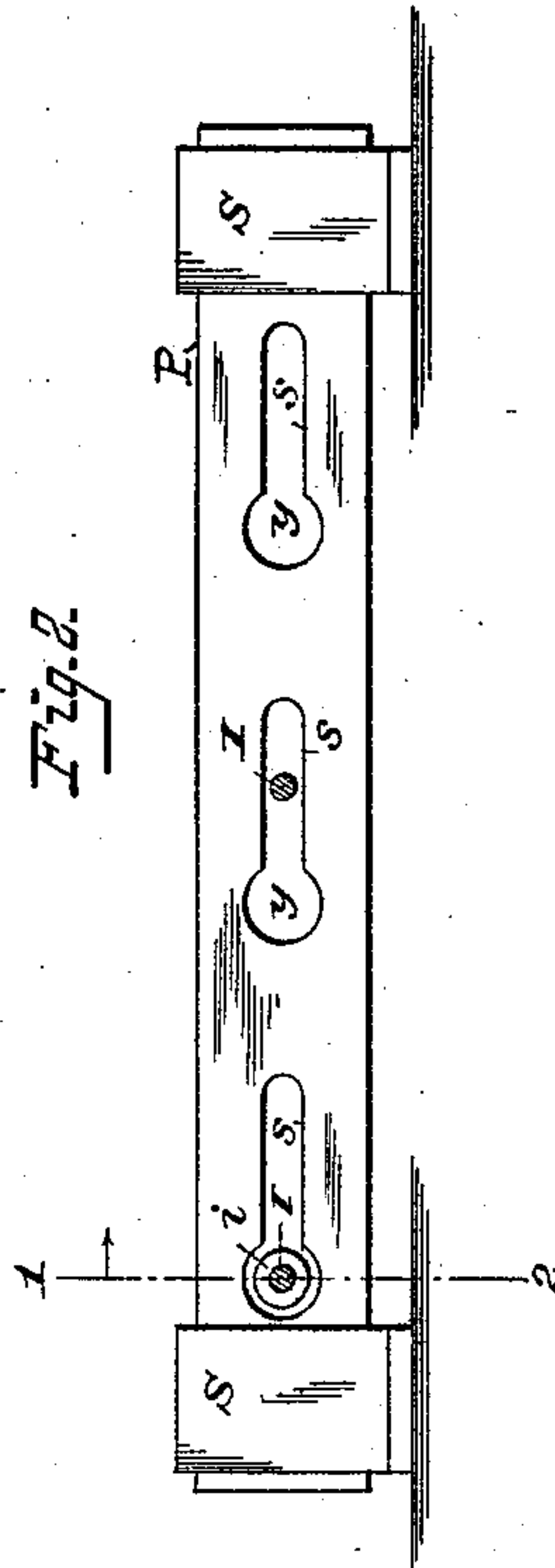
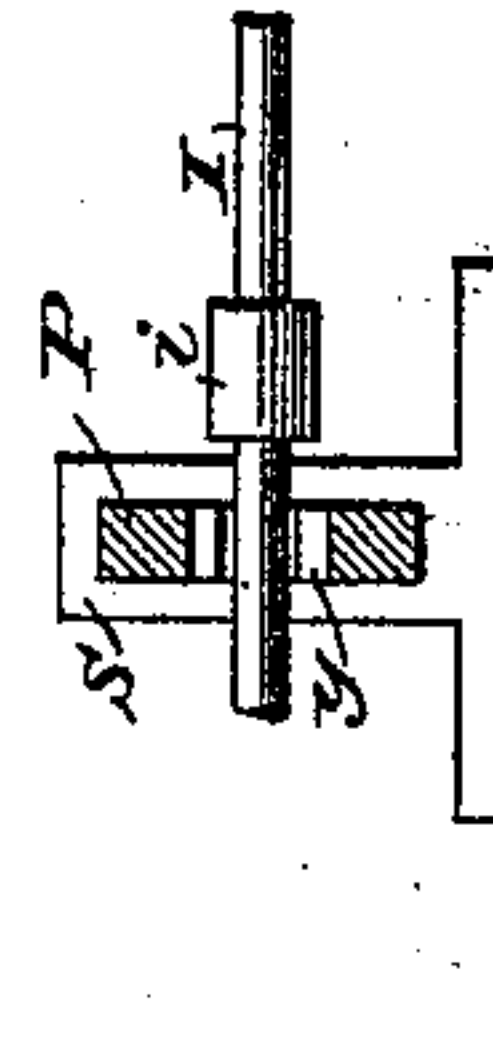


Fig. 3.



Attest:  
Gust A. Cooper,  
A. C. Farnsworth.

Inventor:  
Gustavus N. Reiff,  
By J. M. Freeman  
att'y.



# UNITED STATES PATENT OFFICE.

GUSTAVUS N. REIFF, OF PHILADELPHIA, PENNSYLVANIA.

## RAILWAY SWITCH AND SIGNAL OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 352,780, dated November 16, 1886.

Application filed February 27, 1886. Serial No. 193,485. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAVUS N. REIFF, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Railway Switch and Signal Operating Devices, of which the following is a specification.

My invention relates to that class of railway switch and signal operating devices in which the switch-levers of a gang of levers are automatically locked until the parts of the apparatus are properly adjusted to permit the movements of the lever to set the other parts; and my invention consists in arranging the locking devices adjacent to the parts to be moved, and in constructing the same as fully set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is a plan of a double-track railway and branch line, showing the arrangement of switches and signals, operating-levers, and connections, and illustrating diagrammatically the construction and arrangement of the locking devices. Fig. 2 is a side elevation of one of the locking devices. Fig. 3 is a section on the line 1 2, Fig. 2.

For the purpose of illustrating my invention I have shown it in connection with the junction and siding of a double-track railway, and with the switches, signals, and detector-bars, and usual gang of operating-levers and connections of such a railway, arranged and operating in a manner well known to those familiar with railway matters, and also in connection with signal apparatus for which I made application for Letters Patent on the 8th day of December, 1885, Serial No. 185,203. It should be understood, however, that the above-described features and their arrangement have been shown merely for the purpose of illustrating my invention, which may be applied in connection with any arrangement of signals, switches, and operating-levers, and with various connecting devices between the levers and the parts to be operated.

In the arrangement shown there is a gang of nine levers, 0, 0', 1, 2<sup>a</sup>, 3, 4<sup>a</sup>, 5, 6, and 7.

A A' are the main tracks between two stations.

B B' are branch tracks leading to another station, and forming a junction with the tracks

A A', the switches 2 4 and movable frog-point 2' being arranged as usual. Detector-bars *a a* are connected to a coupling-bar, *b*, adjacent to the frog, and a detector-bar, *a'*, is arranged adjacent to the switch 4, and there is a switch by means of which the cars can be transferred from the track A' to a siding, C, at a point not shown in the drawings.

X is the distant caution-signal of the main line, which is connected to be operated by the lever 0.

Y is the distant signal of the branch line, connected to be operated by the lever 0'.

V V' are the stop or home signals of the main and branch lines, and are both operated by means of a single lever, 1, through the medium of the operating device T, before referred to, and described in my said application for Letters Patent.

The frog-point 2' and point-switch 2 are operated from the lever 2<sup>a</sup>, and the detector-bars are operated from the lever 3. The facing point-switch 4 is operated from the lever 4<sup>a</sup>, the siding-switch is operated from the lever 5, and the levers 6 and 7 operate the home-signals and distant cautionary signals, arranged at points not shown in the drawings.

Adjacent to each signal and switch and to each signal-operating device T, and at other points, as may be desired, is arranged a locking device, which is movable by means of connections leading to one of the levers which does not operate the said switch or signal, so that the said locking device may be adjusted before or after the adjustment of the lever which operates said switch or signal, to thereby lock the switch or signal in position after its adjustment. This arrangement of the locking device adjacent to the part to be locked is attended with many advantages. If, for instance, one of the connections should break between the locking device and the operating-lever, the locking device will not then be unlocked, and any subsequent attempt to set the signal will be defeated, because under the arrangement shown, and as is common in switch-operating devices, the signal cannot be set until after the switch is locked or other moving part has been brought to its proper position. This does not apply to the distant caution-signals, which are generally operated by wires, in which case the locking device may be ar-



ranged adjacent to the operating-levers, and is connected to be operated by or from the lever which operates the switch.

I have designated each locking device in the drawings by the letter L, and this device may be of any construction, so as by adjustment to different positions to permit the adjacent operating-rod or other connection to move with the part to which it is attached, or prevent it from being moved, and I do not limit myself to any particular construction of locking device, but prefer to use a slotted plate. (Illustrated in detail in Figs. 2 and 3, and indicated in Fig. 1.) The said plate is designated by the letter P, and contains a slot, or is otherwise formed so as to present a projecting rib or flange, *s*, along a part of its length, which rib or flange terminates so as to leave a recess, *y*, and the operating-rod *I* extends through the slot or over the edge of the plate, and is provided with an enlargement, *i*, of such size that when the recessed part of the plate is opposite the enlargement the rod can move to carry the enlargement into the slot or across the edge of the plate; but when the plate is shifted so as to bring the rib or flange *s* opposite the enlargement the latter cannot be carried through or across the plate, and the rod *I* and the part to which it is attached will be securely locked in their positions. Each plate may consist of a plate of metal having an opening or recess punched, cast, or otherwise made therein, and may be mounted to slide in slotted standards *S*, or in any convenient form.

Where a series of operating-bars are adjacent to each other, the plate with a series of slots is used—as, for instance, in connection with the levers 0 0', Fig. 1, where the plate constituting the locking device L is shown as having two slots so arranged that when the plate is in one position the enlargement *i* of one of the rods connected to the operating-levers can pass through the enlargement of the slot, while the other cannot; but on reversing the position of the plate the lever which was before locked can be operated, while that which before could be operated is locked. The enlargements *i* are so arranged that, except when the signal or switch is at the limit of its movement in one direction or the other, the said enlargement will occupy a position within the slot of the plate, so that the latter cannot then be moved. This insures a positive adjustment of the signal or switch before any of the other parts can be operated.

In Fig. 1 the locking device connected with the levers 0 0' is shown as connected with a bell-crank lever, *g*, connected to be operated by the rod of the lever 2<sup>a</sup>. As thus arranged, both of the signals X and Y must be in proper position before the locking device can be moved at all, and after the lever 2<sup>a</sup> has been moved to adjust the switch 2 and movable frog-point 2' only the signal X or Y can be adjusted that corresponds with the position of the switch and frog. The lever 1 cannot, however, be

moved unless the locking device L at the point Q is so adjusted that the enlargement of the slot of the plate is opposite the enlargement *i*, and this locking device L depends for its adjustment upon the movement of the lever 3, that controls the position of the detector-bars *a a'* and switch 4, so that these parts must be in proper position before it is possible to set the signal operated by either of the levers 0 0' 1. 70 75

The operation of the other parts will be readily understood from what has already been described. 80

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, with the series of movable switch-points, signals, and other like movable parts of a railway, of a gang of operating-levers and connections, and series of slotted locking-plates, each arranged adjacent to one of the parts to be operated, and constantly traversed by a rod extending to said part and connected with another part to be operated, whereby the latter must be first adjusted to permit the adjustment of the former, substantially as set forth. 85 90

2. The combination, with the rods connected with the movable parts of a railway switching and signaling apparatus, of a movable locking-plate arranged adjacent to the part to be moved, and having a flange and recess traversed by the rod connected with the part to be moved, the said rod having an enlargement adapted to pass through the recess and make contact with the flange, and independent operating devices connected with the locking-plate, substantially as set forth. 95 100 105

3. The combination, with the movable part of a railway signaling and switch apparatus, and with a rod connected thereto and provided with an enlargement, of a slotted locking-plate having a recess for the passage of the enlargement, and a flange arranged to be struck thereby, and independent devices for moving the said plate, substantially as set forth. 110

4. The combination, with a movable part of a switch and signal apparatus, and with the gang of levers thereof, of slotted locking-plates arranged each adjacent to one of the said parts, and connecting-rods passing through the slots of said plates and provided with enlargements, substantially as described. 115 120

5. A locking-plate for railway-switch apparatus, provided with a series of slots, with flanges and enlargements, combined with standards supporting the plate adjustably, and sliding bars provided with shoulders and extending transversely through the slots, substantially as set forth. 125

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GUSTAVUS N. REIFF.

Witnesses:

EDWARD H. JOHNSTON,  
THOMAS NICHOLSON, Jr.